

in one case being derived from the placenta, in the other from the mamma of the mother kangaroo.

“From the foregoing facts certain conclusions may be drawn.

“1. With regard to the placenta.

“Since the organs of the foetal bird are in the same condition as in the human foetus, the nature of the blood supplied to them is probably the same. If so, the umbilical vein of the human foetus contains blood highly nutritious and arterial in character, and therefore the function of the placenta corresponds to that of the chorion membrane, yolk, and white combined; it is in fact the means of absorption, as the veins absorb the yolk and white, and the substitute of the lung in adult life. There is no need of lymphatic vessels in the placenta.

“2. With regard to the liver.

“That the function of this organ is to separate a highly nutritious substance from the blood of the portal vein; and this is true both of the liver of the foetal bird and of the human foetus.

“3. That this albuminous substance is not in a condition to be directly absorbed from the umbilical vein, but is elaborated and separated for absorption by the lacteal vessels.

“4. That there is reason to believe that this function of the liver continues to a great extent during adult life; for the portal vein in that state receives veins which correspond to the umbilical vein in the fact that they proceed from the source of nutrition. That the liver must be actively engaged after the introduction of food into the intestinal canal, and its secretion then more plentiful than at other times.”

II. “Completion of the Preliminary Survey of Spitzbergen, undertaken by the Swedish Government with the view of ascertaining the practicability of the Measurement of an Arc of the Meridian.” In a letter addressed to Major-General SABINE by Captain C. SKOGMAN, of the Royal Swedish Navy: dated Stockholm, Nov. 21, 1864. Communicated by the President. Received December 15, 1864.

“On the receipt of your letter of the 12th of November, I started immediately in quest of Professor Nordenskjöld, to obtain from him the materials for the fulfilment of your wishes in respect to the Spitzbergen Expedition. The Professor, with his usual obliging frankness, at once complied with my request, and communicated to me the Minutes from which I have compiled the subjoined brief Report of his proceedings. You must excuse the hasty manner in which the Report itself, as well as the accompanying map, has been put together, as time presses if my letter has to reach you before your Anniversary on the 30th. The map has no pretensions to exactness, but must be viewed merely in the light of a dia-

gram to show the extent and shape of the triangles, which may also have to undergo future minor modifications.

“Report on the Swedish Expedition to Spitzbergen in 1864.

“During the expedition of 1861 several attempts were made to penetrate into the Storfjord, or Wide Jaws Water; but from ice and calms (the Expedition not being provided with a steamer) they all proved ineffectual. As it was evident, however, that the firth in question is, beyond comparison, the best locality in the island for carrying on the measurement of an arc of the meridian, provided only that it is accessible to vessels, it was resolved that a fresh attempt should be made; and the Estates of the Kingdom having liberally granted the necessary means, another Expedition was fitted out, though on a smaller scale than that of 1861. Mr. Chydenius, who in 1861 had been particularly occupied in selecting and determining the stations for the Survey, unfortunately died in the beginning of 1864. His place has been supplied by Professor Nordenskjöld of the Academy of Sciences at Stockholm, and Mr. Dunér, Professor of Astronomy in the University of Lund, both having been in the Expedition of 1861.

“A small vessel having been chartered at Tromsøe in Norway, they started in the first days of June, and made Bear Island on the 17th, having been detained by gales and adverse winds. Shortly afterwards they reached the opening of the Storfjord; and there appeared to be a good chance of getting in; but the ice soon packed, and, after several ineffectual attempts to force the vessel through, they had to bear up to the western side of Spitzbergen. On June 23rd they were off Bell Sound, but ice and calms prevented their getting in. On June the 25th they anchored at Safe Haven in Ice Sound. Here they remained shut in by the ice until July 16th, making the best use they could of their time by examining the greater part of the Sound, which was found to be considerably larger in extent than is laid down in the charts. Having got out, and returning to the southward, they were met by a heavy southerly gale, which obliged them to run for Bell Sound, where they were detained until July 27th, meanwhile completing the survey of the coasts of that Sound. Being again delayed by head-winds and calms, they did not reach South Cape until August the 7th, and on the 9th had succeeded in getting past the Thousand Islands to Whalers’ Point, close to which is one of the southernmost stations within the firth* [marked ν on the Map, from which, at a height of 1200 feet, the summits of the three stations, ω , τ , and ρ , were seen against the sky]. On the 10th they reached Foul Point, on the opposite land [where a mountain, 1600 feet high (τ), was ascended, from which the summits ν , ρ , ξ , and σ were seen projected against the sky, with the exception of σ , which was backed by land]. On the 16th the third

* The sentences within brackets are supplied from a letter of a still more recent date, from Dr. Otto Torell and Professor Dunér, written from Lund.

station, ρ , was visited [and, from a height of 1100 feet, the summits ν , τ , σ , ξ , and π were observed projected against the sky, and ϕ against other mountains]. On the 21st, after having ridden out a heavy gale, they succeeded in climbing Mount Walrus [marked π], a mountain 1100 feet high, surrounded by glaciers, and laid down as an island on the existing charts. [From this mountain the station marked λ in Mr. Chydenius's map (Royal Society Proceedings, vol. xii. Plate IV.) was seen.]

"Proceeding in the boats they reached, on the 22nd, and ascended a mountain 2500 feet high, situated near the channel which joins the Storfjord with the southern opening of Hinlopen Straits. This was named White Mountain [and is marked ν on the Map]. From this summit they saw on a clear bright day the South Cape of North-east Land (μ), Mount Löven about the middle of Hinlopen Straits on the west shore, and the station marked κ on the eastern shore. Having thus ascertained satisfactory points in the Storfjord, they proceeded again to the west coast of Spitzbergen, with the intention of pushing to the northward as far as possible, but had not proceeded far when they fell in with several boats with the crews of wrecked sealing vessels. Of course they were obliged to take these men on board; and being short of provisions for the increased number of hands, and the season drawing towards its close, they put back to Tromsøe. The sealing vessels had been wrecked on the east side of North-East Land, having got there by the north of the island. The men had afterwards made their way in the boats through Hinlopen Straits, having thus circumnavigated North-East Land—a feat said never to have been accomplished before.

"The shores of the Storfjord are mountainous. The glens and valleys between the ridges are for the most part filled by glaciers, especially on the western shore. The mountains average from 1000 to 1500 feet in height, and belong in general to the Jura formation, which is here and there broken through by basaltic rocks (hyperite). In the Jura have been found skeletons, though not complete, of an *Ichthyosaurus*, closely resembling the species found in Arctic America by Sir Edward Belcher's Expedition. Mr. Malmgren, of the University of Helsingfors in Finland, accompanied the Expedition in the capacity of zoologist."

III. "On the Sextactic Points of a Plane Curve." By A. CAYLEY, F.R.S., Sadlerian Professor of Mathematics, Cambridge. Received November 5, 1864.

(Abstract.)

It is, in my memoir "On the Conic of Five-pointic Contact at any Point of a Plane Curve" (Phil. Trans. vol. cxlix. (1859) pp. 371–400), remarked that as in a plane curve there are certain singular points, viz. the points of inflexion, where three consecutive points lie in a line, so there are singular

